

length found to be behind it, it is reasonable to attribute the change to the man, and not the stream. But all turns upon the assumed steadiness of the stream's onward movement. Looking back on past experience, Mr. Giffen entertains the hypothesis of a constant or "normal" growth of property. But with respect to recent years, it would be possible to cite, from other high authorities, expressions of a contrary opinion. But, if the steady motion of goods is not accepted, presumably the issue between "scarcity of gold" and the opposed theory of appreciation will turn upon a comparison of the rates at which the rate of increase varies for money and commodities respectively—an investigation of *second differentials* which we could not regard as serious.

The difficulties of monetary theory do not attend some of the uses to which the estimate of national capital may be applied. It is not necessary to make a correction for the variation of money when we compare our own with a foreign country in respect of absolute quantity, and even growth, of accumulation. Our colossal capital compares not unfavourably with the capital of the United States, perhaps equal in amount, but much less per head. The £10,000,000,000 of the United Kingdom compares favourably with the £7,200,000,000 of France weighted by a heavy debt, and the surprisingly small £1,920,000,000 of Italy.

The comparison of provinces, as well as nations, is also instructive. Mr. Giffen finds that Ireland has less than a twentieth of the property belonging to the United Kingdom. The property per head in Ireland is less than a third of what it is in England, and not much more than a third of what it is for Scotland. Upon these facts Mr. Giffen remarks:—

"Reckoning by wealth, England should have 86 per cent. of the representation of the United Kingdom, or 576 members out of 670; Scotland, by the same rule, should have about 64 only; and Ireland no more than 30. . . . There should be a representation of forces in Parliament, if we had perfectly just arrangements, and not merely a counting of heads. Nothing can be more absurd to the mind of any student of politics, who knows how forces rule in the long run, than the system now established, as between the metropolitan community of England and its companions in sovereignty, by which one of the companion communities, and that the least entitled to privilege, obtains most disproportionate power."

One of the most legitimate uses to which estimates of national capital can be put, is to ascertain the progress of wealth from age to age. In an historical retrospect, Mr. Giffen reviews the work of his predecessors, rescuing from an undeserved neglect more than one writer who had the courage and sagacity to employ what Colquhoun calls "approximating facts." The succession of estimates, from the age of Petty to the present time, appears to justify the hypothesis of a constant increase of property—a five-fold multiplication per century. Contemplating the long series of records, Englishmen may reflect with pride that the increased estimates are matched by an increasing power of handling them, that the growth of material prosperity has not been attended by a decline in statistical genius, and that the work of Petty is continued by one who is worthy to be compared with the founder of Political Arithmetic.

F. Y. E.

MERGUI.

Contributions to the Fauna of Mergui and its Archipelago.
2 Vols. (London: Taylor and Francis, 1889.)

THE materials which have been brought together in these volumes are now made accessible to those specially interested in the fauna of this group of islands in a connected form. The collections were made in 1881-82 by Dr. John Anderson, F.R.S., till recently Director of the Indian Museum at Calcutta, who brought the specimens to England with him, and placed the different groups in the hands of specialists for their proper identification and description. The result has been the publication of a number of faunistic papers in the Journal of the Linnean Society and elsewhere, and these papers are now published in the form of two volumes, well illustrated with plates, and containing altogether nearly two dozen distinct memoirs by recognized authorities in the different departments.

In the first volume Prof. P. Martin Duncan writes on the Madreporæ, and in his concluding remarks calls attention to the remarkable distinctness of the existing as compared with the Miocene corals of the same area. Prof. F. Jeffrey Bell's paper on the Holothuria comes next in order, and is followed by Mr. F. Moore's paper on the Lepidoptera, the collection in the last order containing 208 species of butterflies, and 64 species of moths. The Sponges are described by Mr. H. J. Carter, F.R.S., and the Ophiuridæ by Prof. Martin Duncan, who contributes also a special paper on the anatomy of *Ophiothrix variabilis* and *Ophiocampsis pellicula*. The Polyzoa and Hydroida are taken in hand by the Rev. Thomas Hincks. The Coleoptera have come off badly, if Mr. Bate's description of one new species (*Brachyonychus andersoni*) represents the whole of the material collected in this order. We suspect, however, that more will be heard about the Mergui beetles at some future period.

Dr. Anderson himself contributes the list of birds, which he regards "merely as a small supplementary contribution" to Messrs. Hume and Davison's labours in the same field. The list chiefly records the distribution in the outer islands of the archipelago of a few of the species recorded by these last authors. Dr. Hoek, of Leyden, writes on a Cirriped (*Dichelaspis pellucida*), which does not appear to have been observed since Darwin published his original description in his monograph. The shells—marine, estuarine, freshwater, and terrestrial—form the subject of a paper by Prof. E. v. Martens, of Berlin. Mr. Stuart Ridley has been entrusted with the Alcyonaria, and Prof. A. C. Haddon describes two species of Actiniæ. The Annelids are treated of by Mr. Frank E. Beddard, who includes in his paper an important section on the structure of the eyes in one of the species described. The Pennatulida are treated of by Prof. Milnes Marshall and Dr. G. H. Fowler, and the Myriopoda by Mr. R. I. Pocock, this being the first list of species recorded from the archipelago. The Comatulæ are described by Dr. P. Herbert Carpenter, the Echinoidea by Prof. P. Martin Duncan and Mr. W. P. Sladen, and the Asteroidea by this last author. These organisms, when referable to known species, "show variations which are sufficient to impart a character to the collection as a whole, and to indicate

the existence of local conditions whose action upon types of a more plastic nature than that of the series of forms so far collected would probably result in new morphological developments." Mr. Sladen further throws out the suggestion that the Mergui area "may be looked upon as a moulding ground wherein Malayan types assume a modified form." A description of the physical conditions prevailing in the localities where the Asteroidea were collected is contributed by Dr. Anderson, and adds much to the value of this paper. The paper on the Mammals, Reptiles, and Batrachians is by Dr. Anderson, the three classes being represented by 23, 53, and 12 species respectively. The whole of the second volume, containing over 300 pages and 19 plates, is devoted to the Crustacea, the author entrusted with this order being Dr. J. G. de Man, of Middleburg, Netherlands. It should be added that this part of the work relates only to the stalk-eyed Crustacea.

The names of the different specialists who stand responsible for their respective contributions are sufficient guarantee that Dr. Anderson and the Calcutta Museum have been the means, aided largely by the Linnean Society, of giving to the public a substantial and trustworthy contribution to the natural history of a much-neglected group of islands. The proximity of the archipelago to the main land of course precludes the possibility of expecting much in the way of insular forms. There is one paper, however, contributed by Dr. Anderson, and forming the second part of the first volume, which will be read with interest by anthropologists, as it contains a description of a peculiar race of sea gipsies called "Selungs," who frequent the archipelago and inhabit many of its islands. These people appear to be sufficiently distinct from those of the main land to warrant their being regarded as an insular race, probably having Malayan affinities. At any rate, all that we know about them at the present time is contained in the paper referred to, which is accompanied by two photographic groups of the people, a photograph of their boats, and a lithographed plate of their weapons and utensils. There is also a vocabulary of their language, which, according to General Browne, bears not the slightest affinity to Burmese, but which Dr. Rost reports to be distinctly Malayan.

R. M.

HOW TO KNOW GRASSES BY THEIR LEAVES.

How to know Grasses by their Leaves. By A. N. M'Alpine. (Edinburgh: David Douglas, 1890.)

THIS little book will be a valuable aid to agriculturists and agricultural students. It is small, and adapted for carrying in a side pocket. It comes out seasonably, as the time is fast approaching in which its teaching may be verified in the field. It fills a gap in our knowledge of grasses, as botanists usually decide species by the inflorescence, rather than by the leaves. Colour, habit of growth, and form of leaf, are, we know, somewhat variable characters, and cannot always be relied upon; and in questions relating to the absolute identification of species, no doubt, inflorescence is of first importance. There is, however, a practical knowledge which derives immense benefit from the kind of information contained in Mr. M'Alpine's work, and after having determined

approximately the component parts of a pasture in the young state, it is open to the observer to wait for further proof in the spike or panicle, which will in due time appear. A grass-field contains a larger number of species, not only of grasses but of clovers, other leguminous plants, and miscellaneous herbage, belonging to the *Compositæ*, *Umbelliferae*, *Rosaceæ*, and other natural orders. This book treats solely of the grasses, and clearly, and with the help of 200 figures, shows how any person may identify grasses in the leafy stage. "The difficulties connected with the identification of grasses in the flowerless condition," says Mr. M'Alpine, "are not at all so great as usually supposed." This is good news from the botanist of the Highland and Agricultural Society of Scotland, Professor of Botany in the New Veterinary College, Edinburgh, and translator of Stebler's "Best Forage Plants." The great and varied knowledge of Mr. M'Alpine, is in itself a guarantee that the distinctions he has traced between the blades and stems of grasses are not of a hasty or flimsy character. Many of them are new to us, but others we have noticed ourselves, and know them to be correct. Any one furnished with a copy of this little book, and a small magnifier, will find that an additional interest will be communicated to walks in the fields, and the question as to the nature of the growing herbage of pastures may be satisfactorily answered. An eye trained to observation will be able to detect slight differences better than the eye which sees not, but we feel confidence that a careful examination of the plates and the letterpress of this little book will, if used in the field, be in itself a training in habits of observation. The book should be in the hands of every agricultural student, as it in due time will become the basis of questions at examinations. The facts that Mr. M'Alpine is himself a teacher, and that Prof. Wallace, of Edinburgh University, has written the preface, point to this conclusion.

The price for so small a book (3s. 6d.) certainly appears very heavy; but if it is called for in sufficient numbers, we shall doubtless soon hear of a cheaper edition. The demand for books of this class is small, as most farmers do not read more than is good for them, and the subject is not of great interest to the general reading public.

The classification adopted by Mr. M'Alpine is not that of genera and species. For example, rye-grasses (*Lolium*) and meadow fescue (*Festuca*) are grouped together, as having red bases to their stems; crested dog's-tail grass is peculiar for a yellow stem base; meadow fox-tail, for a dark or almost black stem base; Yorkshire fog, for having a white sheath, with red veins. These colours at the base of the stem, taken together with other characters, are used to identify the species, and the grasses which are known by the colours just enumerated form a group described as "characteristically coloured grasses." Group II. includes variegated grasses, whose leaf-blades are composed of alternate strips of white and green tissue. Group III. includes bulbous grasses, with low, flat ribs, such as Timothy grass and false oat grass. Group IV., cord-rooted grasses in hill pastures, such as mat grass and purple Molinia. Group V., acute sheathed grasses, so named on account of their sharp edges. The shoots are quite flat on the sides and the edges acute—such are cocksfoot and rough-stalked meadow grass. Group VII., bitter tasted grasses. Group VIII., bristle-